Q.P.Code: 013965

(3 Hours) [Total Marks: 80]

N. B. 1) Question No. 1 is compulsory
2) Attempt any Three Questions out of remaining Five Questions
3) Figures to right indicate Full Marks
4) Assume suitable data if necessary

Q. 1. Write note on any four 5 X 4 = 20
a) Effect of Alloying Elements on Phase Transformation
b) Critical Resolved Shear Stress
c) Creep Test
d) What are Composites? Give Classification of Composites.
e) Importance of Iron as Engineering Material

Q. 2 (a) Draw and Explain Isomorphous and Eutectoid Phase diagram. 08
Q. 2 (b) What is deformation? Explain the slip mode of deformation. 06
Q. 2 (c) Define Fatigue. Draw S – N curve and explain its interpretation. 06

Q. 3 (a) Draw Iron and Iron Carbide (Fe – Fe_3C) diagram and explain the phases existing in it. 12
Q. 3 (b) Explain Flame Hardening and Induction Hardening. 08

Q. 4 (a) Draw and Explain construction of Time Temperature Transformation (TTT) diagram of 0.8% C alloy. 10
Q. 4 (b) Derive an expression for Griffith theory for Brittle Fracture. 10

Q. 5 (a) Give classification of Stainless Steel. 05
Q. 5 (b) Differentiate in between Edge Dislocation and Screw Dislocation. 05
Q. 5 (c) What is Case Hardening? Explain Carburising in detail. 10

Q. 6 Write short note on any four 5 X 4 = 20
(a) Types of Cast Iron
(b) Hardenability Test
(c) Austempering
(d) Methods used for Nanomaterials Synthesis
(e) Normalising